Evaluating Feedback on Workplace Physical Inactivity with Wellness Employees

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Abstract

Excessive sitting, or too much physical inactivity, is a health risk to office workers. This study evaluated the effectiveness of quantitative feedback with university and healthcare office workers on workplace physical inactivity.

A single-case design evaluated the effectiveness of various phases of education, feedback, and modified feedback for individual participants. Daily feedback improved physical activity for 4/8 participants. These results suggest that education alone is not effective and that consequence-based procedures are necessary to impact this behavior.

Introduction

Sitting as a Problem

- Sedentary Behavior (or sitting) is an independent risk factor preventable diseases such as cardiovascular disease, obesity, and type II diabetes (Biswas et al., 2015 and musculoskeletal disorder symptoms (Brandt et al., 2014)

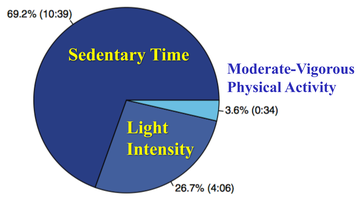


Figure from Müller-Riemenschneider, F., Ng, S. H. X., Koh, D., & Chu, A. H. Y. (2016).

Sedentary Activity
Is Distinct From
Other Daily Activity

- Office workers spend 7-9 hours of work day sedentary (Parry & Straker, 2013)

Previous Research & Rationale

- Need for identification of controlling variables for sedentary behavior (Owen et al., 2011, Van Camp and Hayes (2012)
- Most group studies related to sedentary behavior combine multiple variables (e.g., feedback, consultations, weekly tips, self-monitoring) which obscure individual effects (Gardiner, Eakin, Healy, & Owen, 2011; Kozey-Keadle, Libertine, Staudenmayer, & Freedson, 2012; Healy et al., 2013).
- Green, Sigurdsson, & Wilder (2016) is the first single-case design to evaluate behavioral interventions on sedentary behavior in the workplace; evaluation of this methodology is warranted.

Rationale: Studying the effective components of interventions can promote a cost-effective strategy for reducing sedentary behavior as a risk factor for chronic disease

Method

Participants & Setting

- Office workers; subscribe to UF Wellness Committee Newsletter
- Reported having desk job; research conducted during normal work day

Apparatus

- Fitbit Zip
  - Clipped onto clothing, at hip
  - Reliable source of step counts
- Data
  - Synced with Fitbit app on participants' smartphone
  - Extracted through online dashboard

Procedure

Baseline

- Experimenter read formal script to participants that describes:
  - Health risks associated with excessive sitting and recommendations
  - Instructions on activity break (e.g., walk for 1-2 minutes)
  - Participants synced the Fitbit Zip every day

Feedback 1 (FB1)

- Feedback was delivered via email on activity levels from previous day

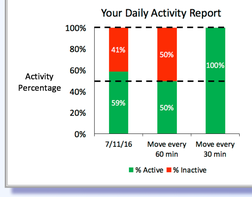
Feedback 2 (FB2)

- Same email procedure as FB1 – more specific feedback on desired target behavior "Take 100 steps every 30 minutes"

Dear Tom,

During your work day yesterday, you were **active for 59% of your day**.

Please do your best to be active **by walking at least 100 steps** every 30 minutes.



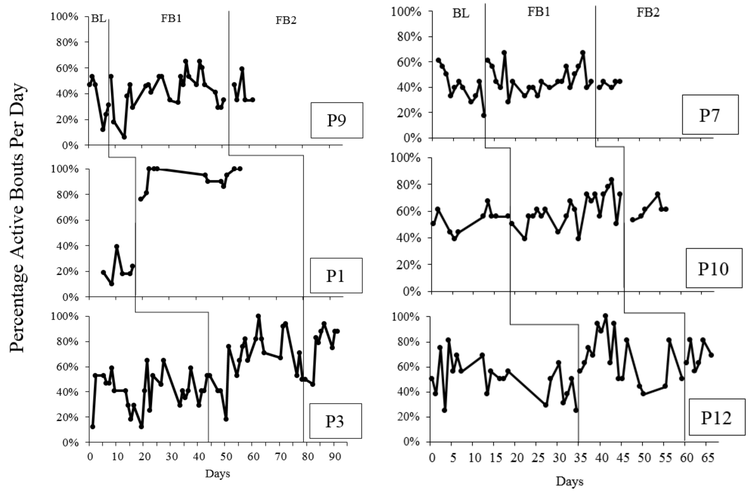
Dependent Variable

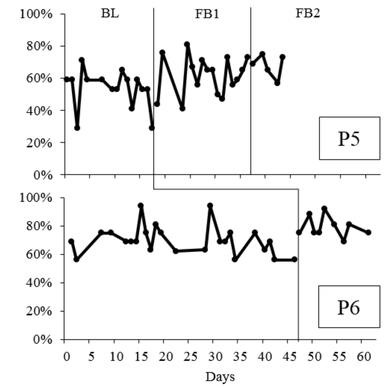
Percentage of Active Bouts / workday

- One bout is defined as a 30 min interval
- An active bout of physical activity is defined as one 30 min interval that sums 100 or more steps
  - Criterion: An adult can walk an average of 100 steps per minute (Tudor-Locke & Rowe, 2012)
- An inactive bout of physical activity is defined as one 30 min interval that sums less than 100 steps.

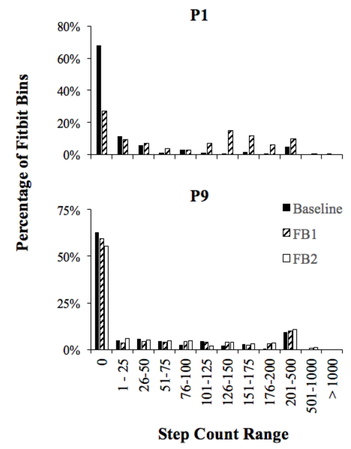
Percent of active bouts per work day = (Active bouts) / (Active Bouts + Inactive Bouts)

Results





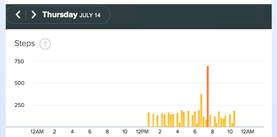
Fitbit Physical Activity Distribution



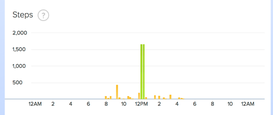
Description of Results

- FB alone clearly effective for one participant (P1)
- Combination of FB1 & FB2 beneficial for 3 others (P3,P6,P12)
- Education phase (BL) alone did not meet termination criteria for any participant
- Participants learned to respond efficiently (P1)
- Fitbit Bin Distribution Analysis reveals changes in physical activity

Efficient Responding



Inefficient Responding



Conclusions

From Study:

- Physical activity increased with FB for 4/8 participants (P1, P3 P6, and P12).
- Education alone (e.g., awareness campaign) is not sufficient enough to change sedentary behavior
- Daily FB produced desired effects for most participants

Future Evaluation of:

- Feedback Criteria (e.g., fewer emails after meeting criterion)
- Delay/Immediacy of Feedback
- Tying workplace physical activity to long-term health outcomes
- Employee preference for physical activity (e.g., walking, stair climbing, treadmill)
- Endorsement of procedures by management/wellness program

Practicality and Barriers

- This study describes a low-cost procedure that shows promise to impact workplace inactivity
- Sedentary behavior in the workplace is a difficult behavior to change even with those interested in health
- Participant feedback suggests moving every 30 minutes is too difficult.
- Competing job demands were reported as a major barrier to moving more